

## ABSTRACT

A lighting optical machine and defect inspection system having high reliability and safety when a laser beam is used as a light source. The lighting optical machine comprises: a housing, which accommodates a laser source, a beam polarization mechanism having first and second plane mirrors enabling a beam emitted from the laser source to be reflected so that the beam travels in the direction almost parallel to the beam emitted from the laser source, a beam expander for converting the beam to a parallel beam having a larger cross-sectional area, an objective lens, through which the parallel beam is reduced and applied to the surface of a sample; a first control mechanism for controlling the directions of the two plane mirrors of the beam polarization mechanism with an electric signal; and a second control mechanism for controlling the focus position of the beam expander with an electric signal.